

CLAIMS

We Claim:

1. A method for communicating, comprising the steps of:
obtaining a first local address for a destination and a first global address for said
5 destination;
creating a message that includes encapsulation within a single protocol level, said
message includes said first local address and said first global address; and
communicating said message toward said destination.
- 10 2. A method according to claim 1, wherein:
said step of obtaining is based on a domain name.
3. A method according to claim 1, wherein:
said message includes a first IP packet, a second IP packet encapsulated in said
15 first IP packet and a third IP packet encapsulated in said second IP packet.
4. A method according to claim 3, wherein:
said first IP packet includes said first global address as a first destination
address;
20 said second IP packet includes said first global address as a second destination
address; and
said third IP packet includes said first local address as a third destination
address.
- 25 5. A method according to claim 3, wherein:
said first IP packet includes said first global address as a first destination address
and a second local address as a first source address, said second local address
corresponds to a source entity;

said second IP packet includes said first global address as a second destination address and a second global address as a second source address, said second global address corresponds to said source entity; and

5 said third IP packet includes said first local address as a third destination address and said second global address as a third source address.

6. A method according to claim 5, further comprising the steps of:
receiving said message at a first intermediate entity;
removing said first IP packet from said message;
10 forwarding said message, after said step of removing said first IP packet, toward said destination;
receiving said message at a second intermediate entity;
removing said second IP packet from said message; and
15 forwarding said message, after said step of removing said second IP packet, toward said destination.

7. A method according to claim 1, wherein:
said message includes a first IP packet, a second IP packet encapsulated in said first IP packet, a third IP packet encapsulated in said second IP packet and a fourth IP
20 packet encapsulated in said third IP packet.

8. A method according to claim 7, wherein:
said first IP packet includes said first global address as a first destination address and a second local address as a first source address, said second local address
25 corresponds to a source entity;

said second IP packet includes said first global address as a second destination address and a second global address as a second source address, said second global address corresponds to said source entity;

said third IP packet includes said first local address as a third destination address and said second global address as a third source address; and
said fourth IP packet includes a pseudo address.

5 9. A method according to claim 1, further comprising the steps of:
receiving said message at an intermediate entity;
removing a layer of encapsulation from said message; and
forwarding said message, after said step of removing, toward said destination.

10 10. A method according to claim 9, further comprising the steps of:
receiving said message at said destination;
removing a layer of encapsulation from said message;
accessing information in said message after said step of removing.

15 11. A method according to claim 10, further comprising the steps of:
providing a pseudo address to an application in said destination based on said
message.

20 12. A method according to claim 1, further comprising the steps of:
creating a pseudo address for said destination; and
adding said pseudo address to said message.

25 13. A method for communicating, comprising the steps of:
receiving a message, said message includes encapsulation within a single protocol
level, said message stores a first global address and a first local address, said first local
address and said first global address correspond to a first entity;
removing at least one level of encapsulation from said message; and
accessing a remaining level of encapsulation.

14. A method according to claim 13, wherein:

said message includes multiple levels of encapsulation after said step of removing; and

5 said step of accessing includes communicating said message toward said first entity using said first global address, said message includes said first local address and said first global address.

15. A method according to claim 13, wherein:

said message is an IP packet.

10

16. A method according to claim 15, wherein:

prior to said step of removing, said message includes a first packet, a second packet encapsulated in said first packet, a third packet encapsulated in said second packet and a fourth packet encapsulated in said third packet;

15

said first packet includes said first global address as a first destination and a second local address as a first source, said second local address corresponds to a source entity;

20

said second packet includes said first global address as a second destination and a second global address as a second source, said second global address corresponds to said source entity;

said third packet includes said first local address as a third destination; and said fourth packet includes a pseudo address.

17. A method according to claim 15, wherein:

25

prior to said step of removing, said message includes a first packet, a second packet encapsulated in said first packet, a third packet encapsulated in said second packet and a fourth packet encapsulated in said third packet;

said first packet includes said first global address as a first destination and a second local address as a first source, said second local address corresponds to a source entity;

5 said second packet includes said first global address as a second destination and a second global address as a second source, said second global address corresponds to said source entity; and

 said third packet includes said first local address as a third destination.

10 18. A method according to claim 13, further including the steps of:
 preparing a response, said response includes said first local address, a second local address and a second global address, said second global address and said second local address correspond to a source entity, said message is created by said source entity, said response includes a set of encapsulated IP packets; and
 sending said response toward said source entity.

15 19. A method according to claim 13, wherein:
 said step of accessing includes communicating said message toward said first entity using said first local address, said message includes said first local address and said first global address.

20 20 A method according to claim 13, wherein:
 said message includes a pseudo address; and
 said step of accessing includes accessing said pseudo address.

25 21. A method according to claim 13, further comprising the steps of:
 identifying a pseudo address based on said message; and
 providing said pseudo address to an application at said destination.

22. A method according to claim 13, further comprising the steps of:
identifying a pseudo address based on said remaining level of encapsulation; and
providing said pseudo address to an application at said destination.

5 23. A method for communicating, comprising the steps of:
using a domain name to obtain a first local address for a destination and a first
global address for said destination;
creating a message that includes said first local address, said first global address
and a first pseudo address; and
10 communicating said message toward said destination based on said first local
address and said first global address.

24. A method according to claim 23, further comprising the step of:
receiving said first pseudo address from an application, said application uses said
15 first pseudo address to address said destination, said step of receiving is performed prior
to said step of creating a message.

25. A method according to claim 24, further comprising the step of:
receiving a second pseudo address, said step of creating a message includes
20 adding said second pseudo address to said message, said destination uses said second
pseudo address to reference a source, said step of communicating is performed by said
source.

26. A method according to claim 25, further comprising the steps of:
25 receiving said message at said destination;
accessing said second pseudo address at said destination; and
using said second pseudo address with an application on said destination.

27. A method according to claim 23, further comprising the step of:
receiving said first pseudo address, said destination uses said first pseudo
address to reference a source, said step of communicating is performed by said source.

5 28. A method according to claim 27, further comprising the steps of:
receiving said message at said destination;
accessing said first pseudo address at said destination; and
using said first pseudo address with an application on said destination.

10 29. A method according to claim 23, wherein:
said message includes encapsulation within a single protocol level.

15 30. A method according to claim 29, further comprising the steps of:
receiving said message at an intermediate entity, said first pseudo address is
stored in an inner layer of said encapsulation;
removing an outer layer of said encapsulation at said intermediate entity without
changing said inner layer of said encapsulation; and
forwarding said message toward said destination.

20 31. A method according to claim 30, further comprising the steps of:
receiving said message at said destination;
removing another layer of said encapsulation at said destination;
accessing said first pseudo address at said destination; and
using said first pseudo address with an application on said destination.

25 32. A method for communicating, comprising the steps of:

5

15

10

20

25

38. One or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a method comprising the steps of:

obtaining a first local address for a destination and a first global address for said destination;

creating a message that includes encapsulation within a single protocol level, said message includes said first local address and said first global address; and

5 communicating said message toward said destination.

39. One or more processor readable storage devices according to claim 38, wherein:

said step of obtaining is based on a domain name.

10

40. One or more processor readable storage devices according to claim 38, wherein:

said message includes a first IP packet, a second IP packet encapsulated in said first IP packet and a third IP packet encapsulated in said second IP packet.

15

41. One or more processor readable storage devices according to claim 40, wherein:

said first IP packet includes said first global address as a first destination address;

20

said second IP packet includes said first global address as a second destination address; and

said third IP packet includes said first local address as a third destination address.

25

42. One or more processor readable storage devices according to claim 38, wherein:

said message includes a first IP packet, a second IP packet encapsulated in said first IP packet, a third IP packet encapsulated in said second IP packet and a fourth IP packet encapsulated in said third IP packet;

5 said first IP packet includes said first global address as a first destination address and a second local address as a first source address, said second local address corresponds to a source entity;

 said second IP packet includes said first global address as a second destination address and a second global address as a second source address, said second global address corresponds to said source entity;

10 said third IP packet includes said first local address as a third destination address and said second global address as a third source address; and

 said fourth IP packet includes a pseudo address.

43. One or more processor readable storage devices according to claim 38,
15 further comprising the steps of:
 creating a pseudo address for said destination; and
 adding said pseudo address to said message.

44. One or more processor readable storage devices having processor
20 readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a method comprising the steps of:

 receiving a message, said message includes encapsulation within a single protocol level, said message stores a first global address and a first local address, said first local
25 address and said first global address correspond to a first entity;
 removing at least one level of encapsulation from said message; and
 accessing a remaining level of encapsulation.

45. One or more processor readable storage devices according to claim 44,
wherein:

said message includes multiple levels of encapsulation after said step of
removing;

5 said step of accessing includes communicating said message toward said first
entity using said first global address, said message includes said first local address and
said first global address; and

said message is an IP packet.

10 46. One or more processor readable storage devices according to claim 44,
wherein:

prior to said step of removing, said message includes a first packet, a second
packet encapsulated in said first packet, a third packet encapsulated in said second
packet and a fourth packet encapsulated in said third packet;

15 said first packet includes said first global address as a first destination and a
second local address as a first source, said second local address corresponds to a
source entity;

20 said second packet includes said first global address as a second destination and
a second global address as a second source, said second global address corresponds
to said source entity; and

said third packet includes said first local address as a third destination.

47. One or more processor readable storage devices according to claim 44,
wherein said method further comprises the steps of:

25 identifying a pseudo address based on said message; and
providing said pseudo address to an application at said destination.

48. One or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a method comprising the steps of:

- 5 using a domain name to obtain a first local address for a destination and a first global address for said destination;
- creating a message that includes said first local address, said first global address and a first pseudo address; and
- communicating said message toward said destination based on said first local
- 10 address and said first global address.

49. One or more processor readable storage devices according to claim 48, wherein said method further comprises the steps of:

- receiving said first pseudo address from an application, said application uses said
- 15 first pseudo address to address said destination, said step of receiving is performed prior to said step of creating a message.

50. One or more processor readable storage devices according to claim 48, wherein:

- 20 said message includes encapsulation within a single protocol level.

51. One or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a method

25 comprising the steps of:

- receiving a message at a destination, said message includes a local address and a global address corresponding to said local address, said message is received based on said global address and said local address;

accessing a pseudo address corresponding to said local address and said global address; and

using said pseudo address with an application.

5 52 One or more processor readable storage devices according to claim 51, wherein:

said message includes encapsulation within a single protocol level.

10 53. One or more processor readable storage devices according to claim 51, wherein said method further comprises the steps of:

removing a layer of encapsulation at said destination; and

accessing said pseudo address based on a remaining layer of said encapsulation.

15 54. An apparatus, comprising:

a communication interface;

a memory device; and

one or more processor, said one or more processors programmed to perform a method comprising the steps of:

20 obtaining a first local address for a destination and a first global address for said destination,

creating a message that includes encapsulation within a single protocol level, said message includes said first local address and said first global address, and communicating said message toward said destination.

25 55. An apparatus according to claim 54, wherein: said step of obtaining is based on a domain name.

56. An apparatus according to claim 54, wherein:

said message includes a first IP packet, a second IP packet encapsulated in said first IP packet and a third IP packet encapsulated in said second IP packet.

57. An apparatus according to claim 56, wherein:

5 said first IP packet includes said first global address as a first destination address;

said second IP packet includes said first global address as a second destination address; and

10 said third IP packet includes said first local address as a third destination address.

58. An apparatus according to claim 54, wherein:

15 said message includes a first IP packet, a second IP packet encapsulated in said first IP packet, a third IP packet encapsulated in said second IP packet and a fourth IP packet encapsulated in said third IP packet;

said first IP packet includes said first global address as a first destination address and a second local address as a first source address, said second local address corresponds to a source entity;

20 said second IP packet includes said first global address as a second destination address and a second global address as a second source address, said second global address corresponds to said source entity;

said third IP packet includes said first local address as a third destination address and said second global address as a third source address; and

25 said fourth IP packet includes a pseudo address.

59. An apparatus according to claim 54, further comprising the steps of:
creating a pseudo address for said destination; and
adding said pseudo address to said message.

60. An apparatus, comprising:

a communication interface;

a memory device; and

one or more processor, said one or more processors programmed to perform

5 a method comprising the steps of:

receiving a message, said message includes encapsulation within a single
protocol level, said message stores a first global address and a first local address, said
first local address and said first global address correspond to a first entity,

10 removing at least one level of encapsulation from said message, and
accessing a remaining level of encapsulation.

61. An apparatus according to claim 60, wherein:

said message includes multiple levels of encapsulation after said step of
removing;

15 said step of accessing includes communicating said message toward said first
entity using said first global address, said message includes said first local address and
said first global address; and

said message is an IP packet.

20 62. An apparatus according to claim 60, wherein:

prior to said step of removing, said message includes a first packet, a second
packet encapsulated in said first packet, a third packet encapsulated in said second
packet and a fourth packet encapsulated in said third packet;

25 said first packet includes said first global address as a first destination and a
second local address as a first source, said second local address corresponds to a
source entity;

said second packet includes said first global address as a second destination and a second global address as a second source, said second global address corresponds to said source entity; and

said third packet includes said first local address as a third destination.

5

63. An apparatus according to claim 60, wherein said method further comprises the steps of:

identifying a pseudo address based on said message; and

providing said pseudo address to an application at said destination.

10

64. An apparatus, comprising:

a communication interface;

a memory device; and

one or more processor, said one or more processors programmed to perform

15 a method comprising the steps of:

using a domain name to obtain a first local address for a destination and a first global address for said destination,

creating a message that includes said first local address, said first global address and a first pseudo address, and

20

communicating said message toward said destination based on said first local address and said first global address.

65. An apparatus according to claim 64, wherein said method further comprises the steps of:

25

receiving said first pseudo address from an application, said application uses said first pseudo address to address said destination, said step of receiving is performed prior to said step of creating a message.

66. An apparatus according to claim 64, wherein:
said message includes encapsulation within a single protocol level.

5 67. An apparatus, comprising:
a communication interface;
a memory device; and
one or more processor, said one or more processors programmed to perform
a method comprising the steps of:
10 receiving a message at a destination, said message includes a local
address and a global address corresponding to said local address, said message is
received based on said global address and said local address,
accessing a pseudo address corresponding to said local address and said
global address, and
15 using said pseudo address with an application.

68. An apparatus according to claim 67, wherein:
said message includes encapsulation within a single protocol level.

20 69. An apparatus according to claim 67, wherein said method further
comprises the steps of:
removing a layer of encapsulation at said destination; and
accessing said pseudo address based on a remaining layer of said encapsulation.